A convenient synthesis of carbon nanodots applied to detect Cr (VI) and ascorbic acid by fluorimetry

Captions to figures:

Fig.S1 Effects of the reaction (a) temperature and (b) time on the fluorescence of CDs. C_{CDs}=0.168 mg/mL

Fig.S2 XRD profile of CDs.

Fig.S3 UV-vis absorption, excitation (emission at 460 nm), and emission (excited at 337 nm) spectra of the synthesized CDs

Fig.S4 (a) Effect of pH; (b) the amount of buffer on the fluorescent intensity of CDs; (c) fluorescence responses of the CDs in the presence of different concentrations (0.1, 0.5, 1.0, 2.0, 3.0 M) of NaCl; (d) concentrations of H_2O_2 (1, 10, 100, 200, 300 mM) and (e) different storage times on the fluorescent intensity. C_{CDs}=0.168 mg/mL

Fig.S5 (a) Effects of the pH and (b) reaction time to fluorescence intensity of CDs and Cr(VI). C_{CDs}=0.168 mg/mL, $C_{Cr(VI)}$=40 μmol/L.

Fig.S6 Zeta potential distribution diagram of CDs (a) and CDs/Cr (VI) (b).

Fig.S7 UV–vis absorption spectra of CDs/Cr(VI) in the presence of different concentrations of AA. (Inset: the amplified absorption spectra of main spectra).

Fig.S8 (a) Fluorescence intensity of CDs in the presence of different micromolecule and amino acids (Concentrations are 1.0 μmol/L). (b) fluorescence recovery time of AA and CDs. C_{CDs}=0.168 mg/mL，$C_{Cr(VI)}$=2.6 mg/mL.

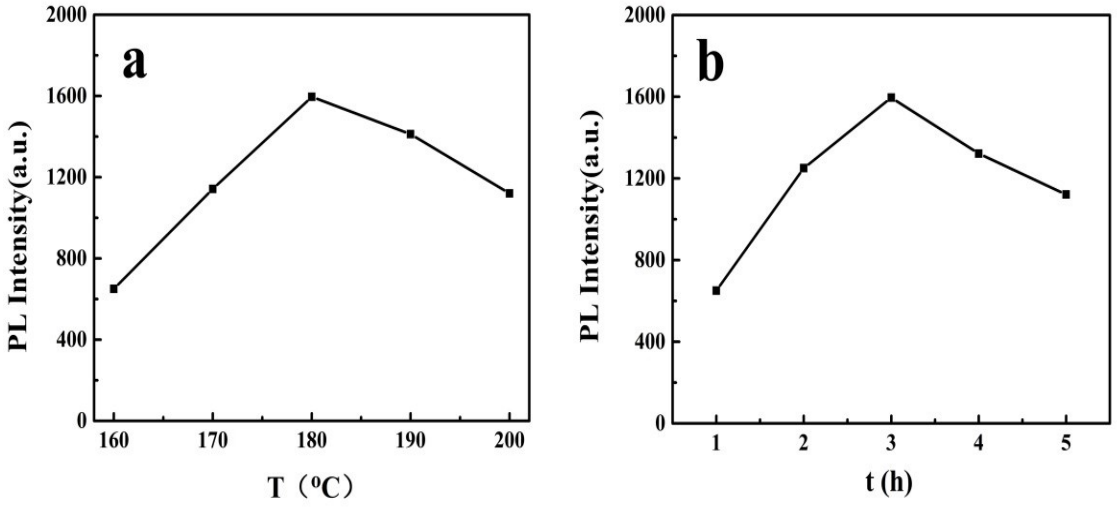

a
PL Intensity(a.u.)
2000
1600
1200
800
400
0
160
170
180
190
200
T（ºC）
b
PL Intensity(a.u.)
2000
1600
1200
800
400
0
1
2
3
4
5
t (h)

Fig.S1

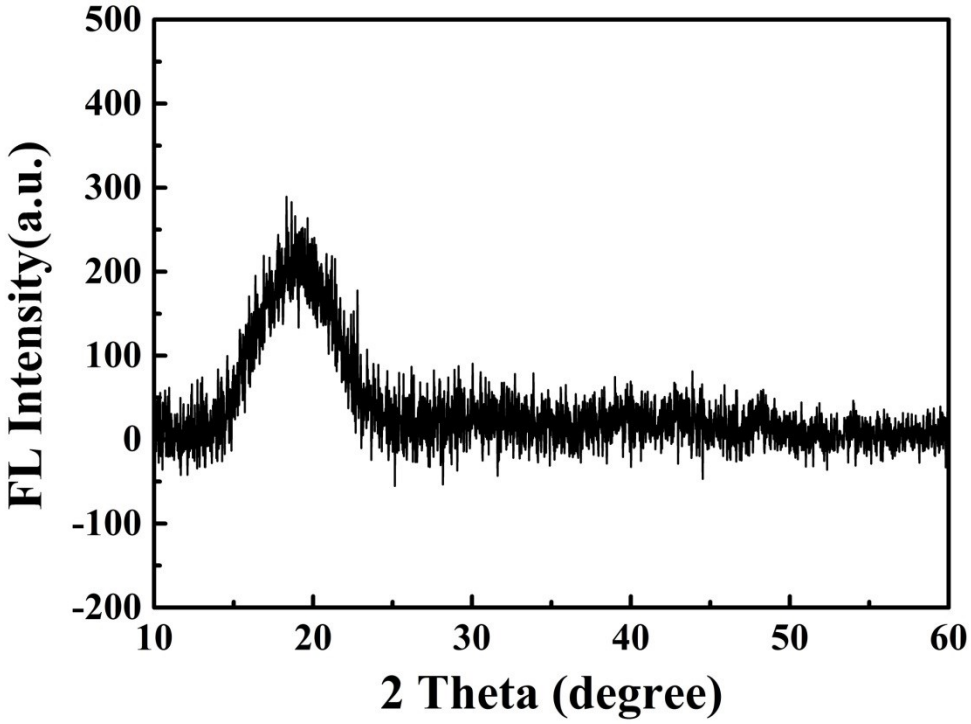

500
400
300
200
100
0
-100
-200
FL Intensity(a.u.)
10
20
30
40
50
60
2 Theta (degree)

Fig.S2

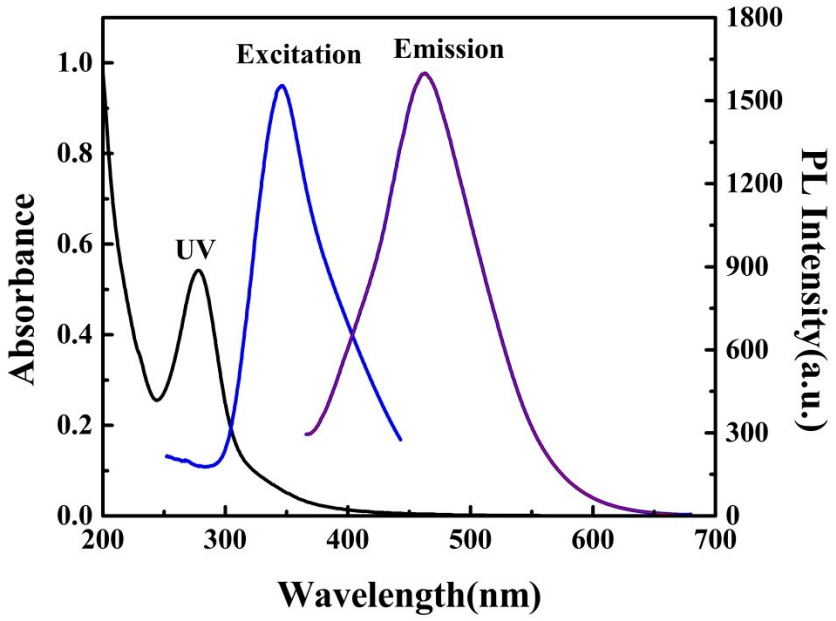

Excitation
Emission
UV
Absorbance
PL Intensity(a.u.)
Wavelength(nm)
1.0
0.8
0.6
0.4
0.2
0.0
1800
1500
1200
900
600
300
0
200
300
400
500
600
700

Fig.S3

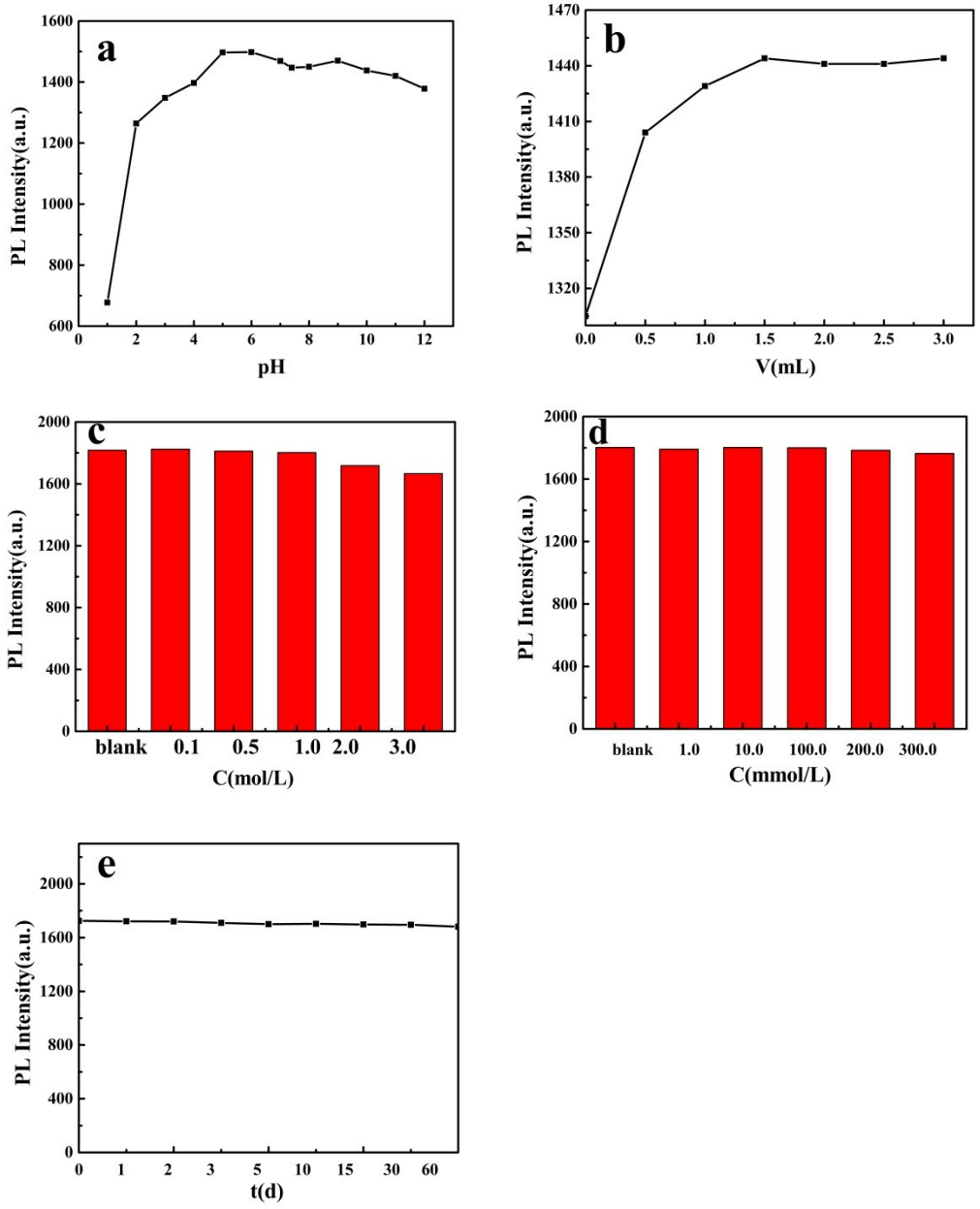
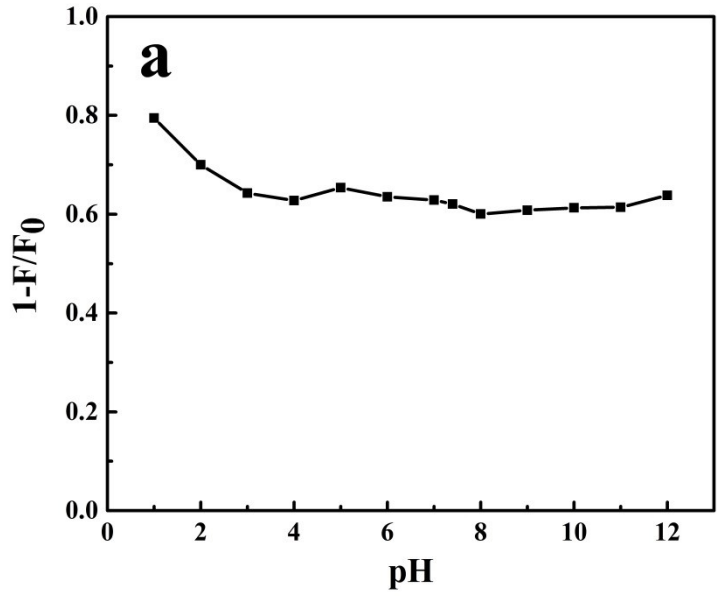

a
PL Intensity(a.u.)
pH
b
PL Intensity(a.u.)
V(mL)
c
PL Intensity(a.u.)
blank 0.1 0.5 1.0 2.0 3.0
C(mol/L)
d
PL Intensity(a.u.)
blank 1.0 10.0 100.0 200.0 300.0
C(mmol/L)
e
PL Intensity(a.u.)
0 1 2 3 5 10 15 30 60
t(d)

Fig.S4


a
1-F/F0
pH
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
10
12

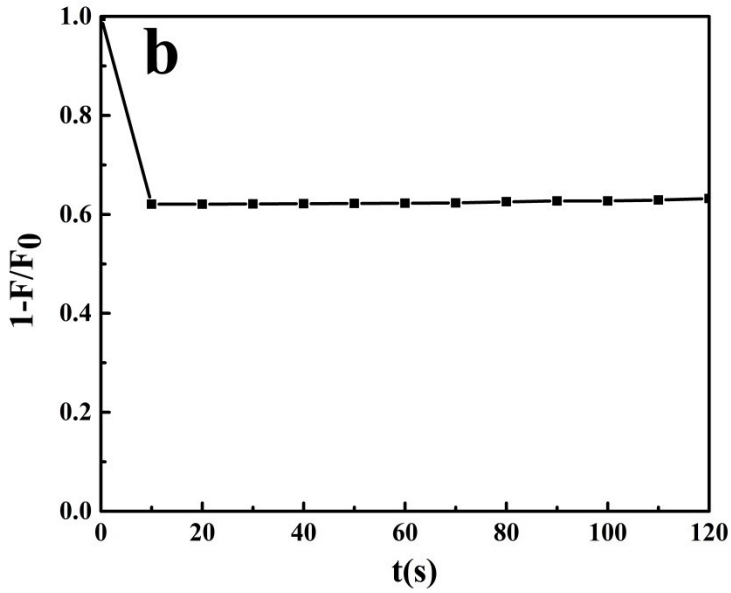
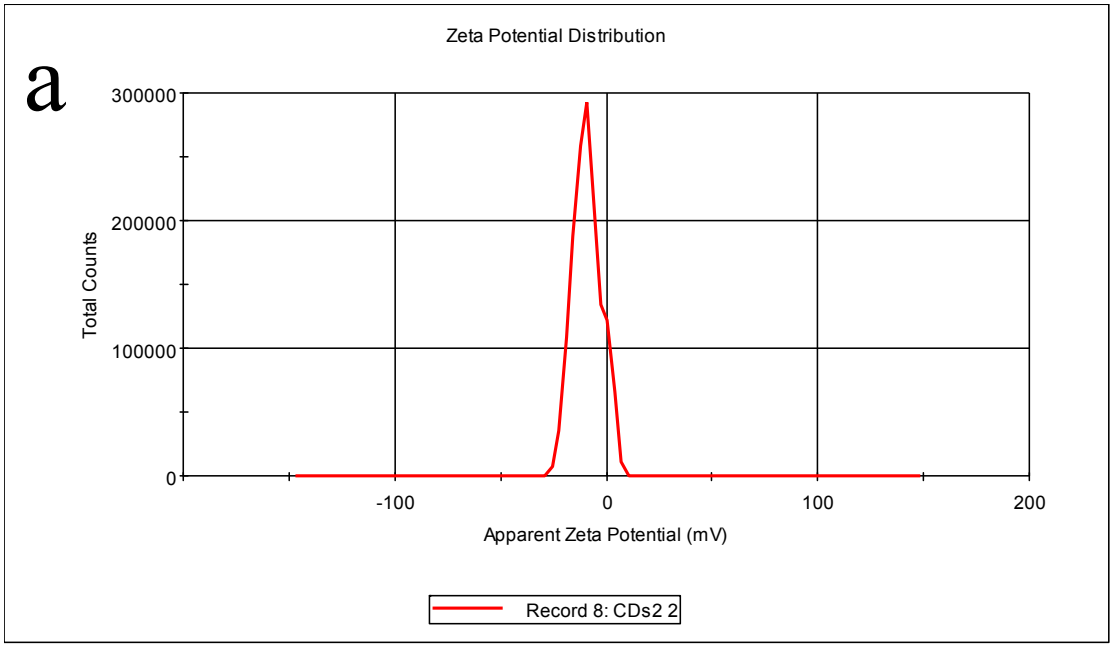

b
1-F/F0
t(s)
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
120

Fig.S5


a
Zeta Potential Distribution
300000
200000
100000
0
Total Counts
-100
0
100
200
Apparent Zeta Potential (mV)
Record 8: CDs2 2

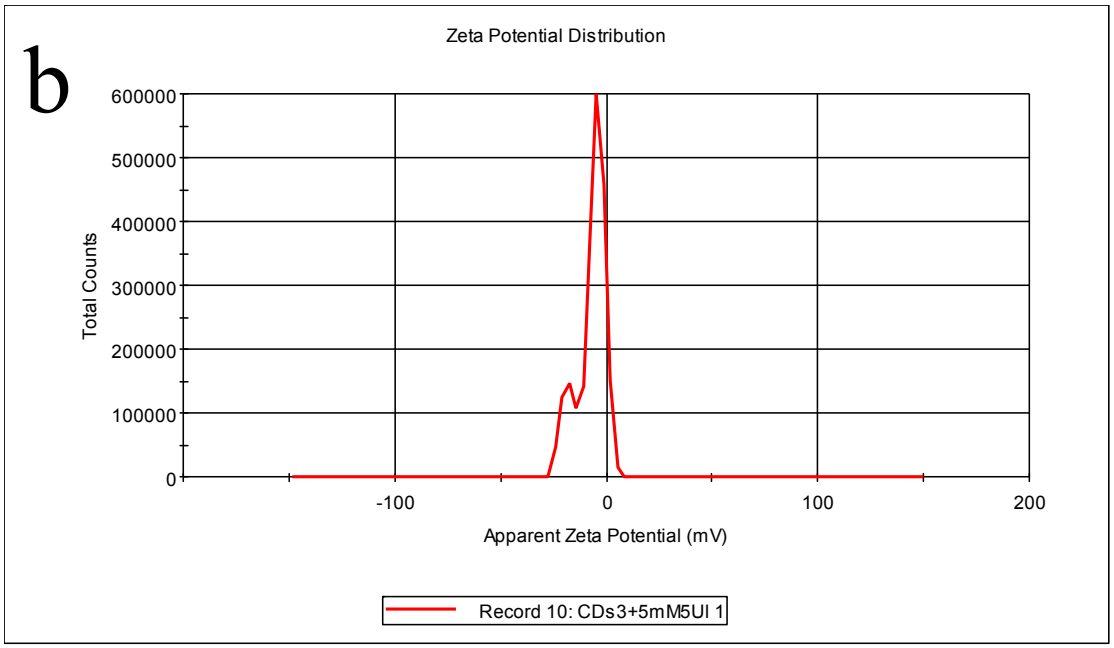

b
Zeta Potential Distribution
600000
500000
400000
300000
200000
100000
0
Total Counts
-100
0
100
200
Apparent Zeta Potential (mV)
Record 10: CDs3+5mM5Ul 1

Fig.S6

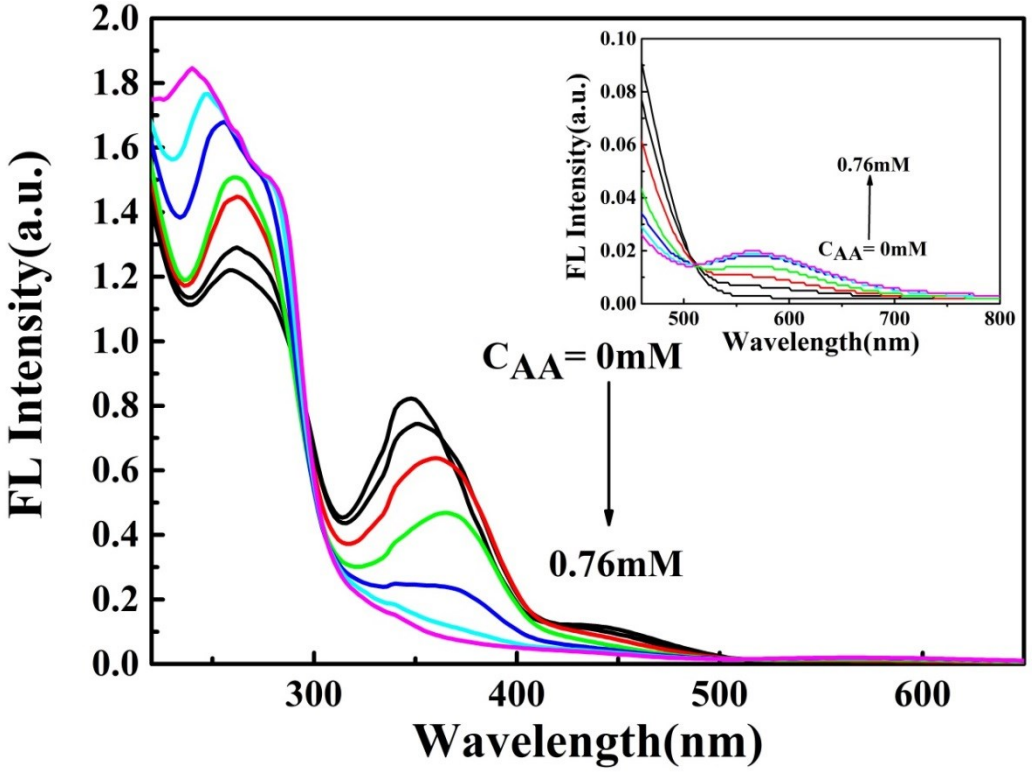

FL Intensity(a.u.)
Wavelength(nm)
C_{AA}= 0mM
0.76mM
FL Intensity(a.u.)
Wavelength(nm)
0.76mM
C_{AA}= 0mM

Fig.S7

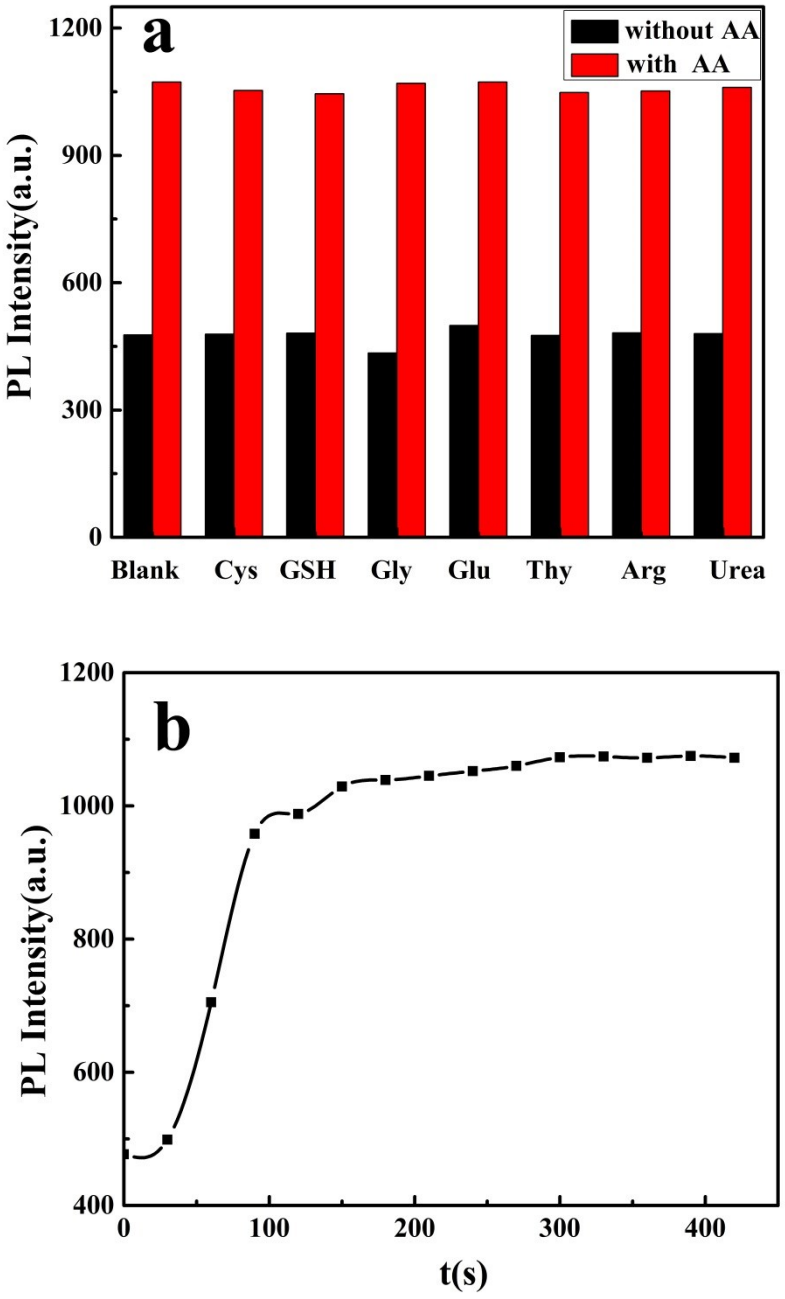

a
without AA
with AA
PL Intensity(a.u.)
1200
900
600
300
0
Blank
Cys
GSH
Gly
Glu
Thy
Arg
Urea
b
PL Intensity(a.u.)
1200
1000
800
600
400
0
100
200
300
400
t(s)

Fig.S8